

What is claimed is:

1. A laparoscopic spray device for mixing and applying a multiple component agent to a target site, comprising:

a first fluid reservoir containing a first component and a second fluid reservoir containing a second component;

an elongated delivery shaft having a proximal end, a distal end, and at least two fluid delivery channels in fluid communication with the first and second fluid reservoirs;

a spray tip assembly detachably coupled to the distal end of the elongated delivery shaft having a sealing member disposed at a proximal end of the spray tip assembly that seals distal ports of the fluid delivery channels of the elongated delivery shaft when the sealing member is in a relaxed state and which allows fluid flow from the distal ports when pressure is applied to the sealing member; and

an elongated mixing chamber in fluid communication with the fluid delivery channels when pressure is applied to the first and second components in the fluid delivery channels.

2. The device of claim 1 wherein the spray tip assembly further comprises at least one spiral mixing channel in fluid communication with the elongated mixing chamber and adjacent a discharge aperture of the spray tip assembly.

3. The device of claim 1 wherein the elongated mixing chamber of the spray tip assembly comprises an elongated cylindrical cavity that tapers distally to a transverse dimension that is less than a transverse dimension of a proximal end of the elongate mixing chamber.

4. The device of claim 1 further comprising at least one lateral port disposed between and in fluid communication with the elongate mixing chamber and a discharge aperture.

5. The device of claim 4 wherein the lateral port is disposed proximally of a distal end of the elongate mixing chamber.

6. The device of claim 1 wherein the first and second fluid reservoirs comprise syringes and wherein the device further comprises a manifold disposed between and in

fluid communication with the syringes and the fluid delivery channels of the elongated delivery shaft.

7. The device of claim 6 wherein the syringes are detachably coupled to the manifold by a Luer-lock configuration.

8. The device of claim 1 wherein the sealing member comprises a flexible disc having an aperture therein for mixing and constraining the flow of components therethrough.

9. The device of claim 8 wherein the flexible disc is comprised of a silastic polymer.

10. A laparoscopic spray device for mixing and applying a multiple component agent to a target site, comprising:

an elongated delivery shaft having a proximal end, a distal end, and at least two fluid delivery channels in fluid communication with the first and second fluid reservoirs;

a spray tip assembly detachably coupled to the distal end of the elongated delivery shaft having a sealing member disposed at a proximal end of the spray tip assembly that seals distal ports of the fluid delivery channels of the elongated delivery shaft when the sealing member is in a relaxed state and which allows fluid flow from the distal ports when pressure is applied to the sealing member; and

an elongated mixing chamber in fluid communication with the fluid delivery channels when pressure is applied to the first and second components in the fluid delivery channels.

11. The device of claim 10 wherein the spray tip assembly further comprises at least one spiral mixing channel in fluid communication with the elongated mixing chamber and adjacent a discharge aperture of the spray tip assembly.

12. The device of claim 10 wherein the elongated mixing chamber of the spray tip assembly comprises an elongated cylindrical cavity that tapers distally to a transverse dimension that is less than a transverse dimension of a proximal end of the elongate mixing chamber.

13. The device of claim 10 wherein the sealing member comprises a flexible disc having an aperture therein for mixing and constraining the flow of components therethrough.

14. The device of claim 10 wherein the flexible disc is comprised of a silastic polymer.

15. A method of mixing and spraying a multiple component agent, comprising:

providing a laparoscopic spray device having a first fluid reservoir containing a first component and a second fluid reservoir containing a second component, an elongated delivery shaft having a proximal end, a distal end, and at least two fluid delivery channels in fluid communication with the first and second fluid reservoirs, a spray tip assembly detachably coupled to the distal end of the elongated delivery shaft having a sealing member disposed at a proximal end of the spray tip assembly that seals distal ports of the fluid delivery channels of the elongated delivery shaft when the sealing member is in a relaxed state and which allows fluid flow from the distal ports when pressure is applied to the sealing member and an elongated mixing chamber in fluid communication with the fluid delivery channels when pressure is applied to the first and second components in the fluid delivery channels;

advancing the components by pressure from the fluid reservoirs through the fluid delivery channels to a distal end of the elongated delivery shaft where the components then contact a proximal surface of the sealing member;

pushing a proximal surface of the sealing member from distal ports of the fluid delivery channels so as to break the seal between the distal end of the fluid delivery channels and the sealing member;

flowing the components into a mixing chamber of the spray tip assembly where the components are mixed; and

discharging the mixed components from a discharge aperture of the spray tip assembly onto a target site.

16. The method of claim 15 wherein the mixed components are discharged from the discharge aperture in atomized form.

17. The method of claim 15 wherein the sealing member comprises a flexible disc having a central passage disposed in a center portion thereof and the components flow radially inward from discharge ports of the fluid delivery channels and converge and begin to mix together as they pass through the central passage of the flexible disc and thereafter, into the elongated mixing chamber.